U S DEPARTMENT OF COMMERCE PATENT AND TRADEMARK JRM PTO-1390 FFICE REV 11-2000) 449122004500 U.S. APPLICATION NO. (If known, s TRANSMITTAL LETTER TO THE UNITED STATES DESIGNATED/ELECTED OFFICE (DO/EO/US) CONCERNING A FILING UNDER 35 U.S.C. § 371 PRIORITY DATE CLAIMED INTERNATIONAL FILING DATE INTERNATIONAL APPLICATION NO. 17 December 1998 PCT/DE99/03802 01 December 1999 TITLE OF INVENTION COMMUNICATION-ENABLED IMAGE RECORDING DEVICE APPLICANT(S) FOR DO/EO/US Joachim LAIER et al. Applicant herewith submits to the United States Designated/Elected Office (DO/EO/US) the following items and other information: This is a FIRST submission of items concerning a filing under 35 U.S.C. 371. × 1. This is a SECOND or SUBSEQUENT submission of items concerning a filing under 35 U.S.C. 371. 2. This is an express request to begin national examination procedures (35 U.S.C. 371(f)). The submission must include items (5), (6), (9) and (21) 3. The US has been elected by the expiration of 19 months from the priority date (PCT Article 31). × 4 A copy of the International Application as filed (35 U.S.C. 371(c)(2)) X 5. is attached hereto (required only if not communicated by the International Bureau). × a. has been communicated by the International Bureau. b. is not required, as the application was filed in the United States Receiving Office (RO/US). c. An English language translation of the International Application under PCT Article 19 (35 U.S.C. 371(c)(2)). X is attached hereto. × has been previously submitted under 35 U.S.C. 154(d)(4). b. Amendments to the claims of the International Application under PCT Article 19 (35 U.S.C. 371(c)(3)). X are attached hereto (required only if not communicated by the International Bureau). × have been communicated by the International Bureau. have not been made; however, the time limit for making such amendments has NOT expired. c. d. have not been made and will not be made. An English language translation of the amendments to the claims under PCT Article 19 (35 U.S.C. 371(c)(3)). × An oath or declaration of the inventor(s) (35 U.S.C. 371(c)(4)). X An English language translation of the annexes to the International Preliminary Examination Report under PCT Article 36 (35 U.S.C. 371(c)(5)). × 10. Items 11. to 16. below concern document(s) or information included: An Information Disclosure Statement under 37 CFR 1.97 and 1.98. × 11. An assignment document for recording. A separate cover sheet in compliance with 37 CFR 3.28 and 3.31 is included. 12. X A FIRST preliminary amendment. 13. A SECOND or SUBSEQUENT preliminary amendment. 14. A substitute specification. 15. A change of power of attorney and/or address letter. 16 A computer-readable form of the sequence listing in accordance with PCT Rule 13ter.2 and 35 U.S.C. 1.821 - 1.825. 17

20. Z Other items or information: 1. International Search Report 2. IPER 3. Information Data Sheet 4. Return receipt postcard.

A second copy of the published international application under 35 U.S.C. 154(d)(4).

I hereby certify that this correspondence is being hand filed with the United States Patent and Trademark Office in Washington, D.C. on June 15, 2001.

A second copy of the English language translation of the international application under 35 U.S.C. 154(d)(4).

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Description

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Communications-enabled image recording device

5 The invention relates to a communications-enabled image recording device for still and/or moving images, particular a digital camera having a semiconductor image recording sensor, in particular a CMOS/CCD chip or similar array, an image recording and image data transfer control unit for the image data and/or text or 10 audio data transfer to an external data sink, such as computer with image a personal reproduction monitor or a mass storage device, and also having an operating display and having operating elements for modes, 15 setting operating and also а method operating such a communications-enabled image recording device.

from the prior art, digital cameras having integrated fixed or exchangeable memories, based on CCD sensors, have been known and commercially available since about the beginning of the 1990s. Such cameras or image recording devices have both an operating display and an indicating display which can be used to control the individual functions for image recording. Furthermore, the displays also make it possible to view the electronically stored recordings in order to check the image quality on site.

30 Via existing standard interfaces, using a suitable software, it is possible for the stored image data to be read out and for these contents to be accepted into the memory of a personal computer, in order to process the recording digitally or to output it via a connected printer or some other print medium.

Also known are so-called data communications terminals in compact telephone form, with the aid of which e.g. e-mails can

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be received or sent. In conjunction with a notebook or a personal computer, such terminals in telephone form can be used as cableless modem. With rising transmission capacities of the mobile radio standards, it is possible also to transmit volumes of image data in real time in the course of the mobile communication.

The mobile phone with videophone adapter known under the product identifier Datascope of Kyocera K.K., Japan, can be used as a visual display telephone. 10 With an LC display present in the Datascope mobile phone as viewfinder, it is possible to produce color digital recordings. The image discernible viewfinder is stored as a JPEG file in the flash memory of the mobile phone. The image file stored in the flash 15 memory of the Datascope can then be sent as a binary file via a standard network using a special file transfer function, the so-called x-modem function. In the way, it is possible to receive data from the network using the videophone. 20

The prior art described above has the disadvantage, however, that an additional display device, for example the display of a computer system, is necessary for the representation of user and/or status information for the actual transmission operation. Only through these further technical means it is possible for the user, in the course of the communications and data transmission, to be able to assess the status of the individual operations or success or failure.

It is an object of the invention, therefore, to specify a communications-enabled image recording device for still and/or moving images, in particular a digital camera, and a method for operating such an image recording device which make it possible, in a particularly simple manner, to represent the required

status information and/or instructions in particular for the image data or

some other data transfer, with the intention that this possibility shall be independent of the type of image recording device used or of the respective camera. Furthermore, the intention is that when constructing communications systems with the utilization of special digital image recording devices, the overall costs shall be kept low, without having to dispense with an intrinsically desired functionality and functional diversity.

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The object of the invention is achieved by means of a communications-enabled image recording device for still and/or moving images, in particular a digital camera, as is defined in the valid patent claim 1. In respect of the method, in order to achieve the object, reference is made to the operation of a digital image recording device as per the definition according to patent claim 5.

In this case, the subclaims constitute at least 20 expedient refinements and developments of the invention.

The basic concept of the invention consists dispensing with an additional display unit or display by virtually allocating dual function a operating display that is present anyway in the image recording device. Thus, in a memory module, which may be part of the actual camera memory, images are stored which also contain texts and/or symbols which provide the user with information about the status of the image data communication or the communications system or which comprise instructions for operating the system.

This status information and/or instructions for the image data or some other data transfer can be accepted via an interface present per se into the memory module or image memory, but can also be acquired photographically in a simple manner.

During operation of the image recording device in the function data transfer, the image data transfer control unit then has the

possibility of accessing the memory module in order to enable the desired representation of the status information and/or of the instructions on the display.

Accordingly, in concrete terms, provision is made of a memory module for the representation of the above-described status information and/or instruction for the image data transfer but also for the transfer of accompanying audio data on the operating display, the memory module being connected to an interface. Via this interface, externally offered digit and/or letter sequences and/or graphics or similar representations for the identification of the respective status or for the operating instruction can then be accepted into the memory module.

The abovementioned image data transfer control unit then has access to the memory module and makes it possible to display or enable the desired representation on the operating display.

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In one embodiment of the invention, the memory module is a separately addressable area of the central camera memory. The operating display of the camera, for example a liquid crystal (LC) display, can be driven by a driver, in which case the driver fetches data from the memory module according to specification by the control unit.

The image data transfer control unit can be connected 30 to a transmitting unit, in which case this transmitting unit may also be an integral part of the camera. The transmitting unit has a radio transmitting assembly with antenna for establishing a wire-free connection via a GSM, UMTS, DECT or similar standard 35 telecommunications network and/or transfer а data interface for wire-based, bit-oriented transmission via an ISDN or similar network.

The operating display of the camera or the display driver can be driven externally, which means that it is possible,

independently of the respective camera type, by means of the remote controllability, to call up status information and/or instructions for the data transfer which are to be correspondingly represented on the display.

In the same way as the transmitting unit, the image data transfer control unit may also be an integral part of the camera.

In respect of the method, in order to operate the image recording device for displaying status information and/or instructions on the operating display for or during the data transfer, in particular image data transfer, a digit and/or letter sequence and/or graphic or a pictorial representation is read from the camera memory, the selection of the representations being automatically initiated by the image data transfer control unit in accordance with the respective commands and/or operations.

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The digit and/or letter sequences, graphics or other pictorial representations which are stored in the memory can be erased by means of the above-described external access, but can also be changed and thus updated.

In one refinement of the invention, it is possible that image recording device, in particular a when the camera, is connected to a memory for addressing data sinks or has such a memory, the status information also comprises, for example, a photograph or a graphical representation which specifies the user or the data sink. It is thus conceivable for a telephone number memory to contain the photograph of the subscriber as alternative or in addition to the abbreviated names, said photograph being presented in a selection memory on the camera display, thereby simplifying the handling of the data communication between data source and data sink.

The invention will be explained in more detail below using an exemplary embodiment and also with the aid of figures.

5 In this case:

Figure 1 shows a basic illustration of an image data communications system, and

Figure 2 shows a block diagram of the image recording 10 device with the possibility of displaying status information and/or instructions for with data transfer the recourse corresponding graphical representations or 15 like from memory the а module, said representations having been introduced made available beforehand.

The image data communications system shown in figure 1 is based on an image data source and at least one image data sink. The image data source comprises the image recording device 1, a control unit 2 and a transmitting unit 3. The data sink comprises receiving unit 4 and also image reproduction unit 5.

The image data transmission can be effected, with the utilization of the transmitting unit 3 and receiving unit 4, either in a wire-free manner, e.g. via the GSM mobile radio network, or else in a wire-based manner, e.g. via the telephone network according to the ISDN

Control and monitoring of the image transmission and reception process from the data source to the data sink usually necessitate components for optical reproduction of the status information and of operating instructions both at the transmitter end and at the receiver end. For the representation of transmitted image data and

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standard.

for the indication of corresponding status information, previous systems use the monitor of a computer system operating as control unit 2.

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According to the exemplary embodiment, the display present in image recording devices, in particular digital still image cameras, is not only utilized for image reproduction but is also used for outputting instructions for operating the camera and for the representation of status information. By virtue of the fact that it is possible to have recourse to the display present in the image recording device, it is possible to dispense with an additional display unit or a monitor in connection with the control unit 2.

According to figure 2, which shows a block diagram of a digital camera, the latter has an e.g. LC or TFT display 6. The display, which usually serves for reproducing recordings and includes the possibility of representation of a menu, interacts with a display driver 7.

A memory module 8 is able to accept, via an interface 9, externally offered digit and/or letter sequences and/or graphics or similar representations which enable identification of the respective status or represent an operating instruction.

The image data transfer control unit 10 firstly has 25 access to the interface 9 and is able to activate and enable corresponding address ranges in the memory module Through simultaneous activation of 8. display driver 7, the specific representations held in 30 the memory module 8 are represented on the display 6, with the result that e.g. the information "image data receiver is selected" or "image data successfully transmitted, you may switch the device off" becomes visible.

For reading in such representation data records, it is possible, as can be seen from the block diagram

according to figure 2, for the image data transfer

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control unit 10 to enable the data acceptance via the interface 9 toward the

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memory module 8 and to ensure that this information is written to correspondingly provided memory areas. In a preferred exemplary embodiment, the memory module 8 is a reserved addressing area of the actual camera memory, with the result that additional hardware requirements can be reduced to a minimum.

It becomes clear from the exemplary embodiment that, with the solution described above, it is not only possible to dispense with additional display units for a control unit 2, rather it is possible to integrate such a control unit including transmitting unit 3 into the camera, thereby increasing the functionality of the latter. The outputting and the content of messages on the camera display are, moreover, totally independent of the camera used, provided that the possibility is afforded there of correspondingly remotely controlling the camera display, i.e. accessing the display driver 7.

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Patent claims

- A communications-enabled image recording device 1. for still and/or moving images, in particular a semiconductor digital camera having а recording sensor, in particular a CMOS/CCD chip or similar array, an image recording and image data transfer control unit for the image data and/or text or audio data transfer to an external data sink, such as e.g. a personal computer with image reproduction monitor or a mass storage device, and operating display and having having an operating elements for setting operating modes, characterized in that provision is made of a memory module (8)
- for holding and indirectly representing status information and/or instructions for the image data transfer on the operating display (6), the memory module (8) being connected to an interface (9) in 20 order to accept into the memory module externally offered digit and/or letter sequences and/or graphics or similar representations for identifying the respective status, furthermore, the image data transfer control unit (10) has access at least to the memory module (8) 25 in order to display the desired representation on the operating display (6).
- 2. The communications-enabled image recording device as claimed in claim 1, characterized in that the memory module (8) is a separately addressable area of the central camera memory, or in that the representations are provided with a particular identification symbol in order to

define them as status information.

AMENDED SHEET

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- 3. The communications-enabled image recording device as claimed in claim 1 or 2, characterized
- in that the operating display is a camera display which can be driven by a display driver (7), in which case, via the

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driver (7), data can be fetched from the memory module (8) according to specification by the control unit (10).

- 5 4. The communications-enabled image recording device as claimed in one of the preceding claims, characterized
- in that the image data transfer control unit (10) is connected to a transmitting unit (3), and in 10 the transmitting unit (3) has a transmitting assembly with for antenna establishing a wire-free connection via a GSM, UMTS, DECT or similar standard telecommunications network and/or a data transfer interface for wirebased, bit-oriented transmission via an ISDN or 15 similar network.
 - The communications-enabled image recording device as claimed in one of the preceding claims,
- 20 characterized in that the operating display (6) or the display driver (7) can be externally driven or activated.
- 6. The communications-enabled image recording device as claimed in one of the preceding claims, characterized in that the image data transfer control unit (10) is an integral part of the image recording device or camera.

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7. A method for operating a communications-enabled image recording device for still and/or moving images, in particular a digital camera, which has a semiconductor image recording sensor, in particular CMOS/CCD chip or similar array, an

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image recording and image data transfer control unit for the image or other data transfer to an external data sink, such as e.g. a personal computer with image reproduction monitor, or a mass storage device, the integrated image recording and image data transfer control unit being connected to an operating display and also operating elements or setting operating modes,

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characterized

memory.

in that, in order to display status information and/or instructions on the operating display for or during the data transfer from the data source to the data sink, digit and/or letter sequences and/or graphics or similar representations are read from an additional memory module, the selection of the representations being automatically initiated by the image data transfer control unit in accordance with the respective commands and/or operations.

8. The method as claimed in claim 7, characterized in that the digit and/or letter sequences and/or

graphics or similar representations which are stored in the memory module can be erased and/or changed and thereby updated by external access after positive checking of authorization.

9. The method as claimed in claim 7 or 8,
characterized
in that the memory module is formed by a
separately addressable area of the central camera

Abstract

Communications-enabled image recording device

The invention relates to a communications-enabled image recording device having a memory module for holding status information and/or instructions for the data transfer on the operating display, the memory module being connected to an interface in order to accept into the memory module externally offered digit and/or and/or graphics letter sequences orsimilar representations for identifying the respective status. The image data transfer control unit has access to the display memory module in order to the desired representation on the operating display.

FIG. 2

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Declaration and Power of Attorney For Patent Application Erklärung Für Patentanmeldungen Mit Vollmacht German Language Declaration

Als nachstehend benannter Erfinder erkläre ich hiermit an Eides Statt:

As a below named inventor, I hereby declare that:

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dass ich, nach bestem Wissen der ursprüngliche, erste und alleinige Erfinder (falls nachstehend nur ein Name angegeben ist) oder ein ursprünglicher, erster und Miterfinder (falls nachstehend mehrere Namen aufgeführt sind) des Gegenstandes bin, für den dieser Antrag gestellt wird und für den ein Patent beantragt wird für die Erfindung mit dem Titel:

I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled

Kommunikationsfaehige Bildaufnahmeeinrichtung

Communication-enabled image recording device

deren Beschreibung

the specification of which

(check one) ☐ is attached hereto.	
was filed on01.12.	1999 as
PCT international applic	ation
PCT Application No	PCT/DE99/03802
and was amended on	
	(if applicable)

Ich bestätige hiermit, dass ich den Inhalt der obigen Patentanmeldung einschliesslich der Ansprüche durchgesehen und verstanden habe, die eventuell durch einen Zusatzantrag wie oben erwähnt abgeändert wurde.

I hereby state that I have reviewed and understand the contents of the above identified specification, including the claims as amended by any amendment referred to above.

Ich erkenne meine Pflicht zur Offenbarung irgendwelcher Informationen, die für die Prüfung der vorliegenden Anmeldung in Einklang mit Absatz 37, Bundesgesetzbuch, Paragraph 1.56(a) von Wichtigkeit sind,

I acknowledge the duty to disclose information which is material to the examination of this application in accordance with Title 37, Code of Federal Regulations, §1.56(a).

Ich beanspruche hiermit ausländische Prioritätsvorteile gemäss Abschnitt 35 der Zivilprozessordnung der Vereinigten Staaten, Paragraph 119 aller unten angegebenen Auslandsanmeldungen für ein Patent oder eine Erfindersurkunde, und habe auch alle Auslandsanmeldungen für ein Patent oder eine Erfindersurkunde nachstehend gekennzeichnet, die ein Anmeldedatum haben, das vor dem Anmeldedatum der Anmeldung liegt, für die Priorität beansprucht wird.

I hereby claim foreign priority benefits under Title 35, United States Code, §119 of any foreign application(s) for patent or inventor's certificate listed below and have also identified below any foreign application for patent or inventor's certificate having a filing date before that of the application on which priority is claimed:

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Unterschrift des Erfinders Datum	Inventor's signature Date
(ex (or) 27.03.09	
Wohnsitz	Residence
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Voller Name des zweiten Miterfinders (falls zutreffend): Dr. HEINZ MATTES	Full name of second joint inventor, if any: Dr. HEINZ MATTES
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Dr. HEINZ MATTES Unterschrift des Erfinders Datum 27.3.7001	Dr. HEINZ MATTES Second Inventor's signature Date
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(Supply similar information and signature for third and subsequent joint inventors).

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